



Australian Government

Department of Education, Employment and Workplace Relations

MSS014003A Optimise sustainability of a process or plant area

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers optimising the sustainability performance of a complete work area in a plant or part of the manufacturing value chain. It includes ensuring that production systems comply with sustainability and other environmental requirements and that optimal process, plant and equipment utilisation is planned and carried out. It also covers problem solving to fully meet sustainability needs and to ensure that production of finished goods meets customer requirements.

Application of the Unit

This unit applies inside organisations and their value chains. The unit has been developed with manufacturing operations as a focus especially work areas that process materials or components to manufacture products. However, because of the range of organisations in a typical manufacturing value chain it may also be applied to other types of organisations. The unit scope includes products made, services offered, and use of sites by an organisation or manufacturing value chain member (e.g. supplier of goods or services or a customer). This unit describes the work conducted by senior operators, technicians, team leaders or frontline managers and other support staff who optimise process systems as part of their work function. The unit includes all items of equipment and unit operations which form part of the process of a complete area and assumes that the required production, technical, science or other operational skills and knowledge necessary to work in the process or work area have already been gained.

All operations are performed in accordance with organisational procedures, licensing requirements, legislative requirements and industrial awards and agreements.

Environmental sensitivities referred to in this unit are at the issue level. The technical measurement of operational performance or measurement of emissions or other environmental impact is not covered by this unit.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 Analyse and evaluate current sustainability performance of process or work area | 1.1 Identify sustainability goals of the enterprise as they relate to work area |
| | 1.2 Compare actual with possible performance |
| | 1.3 Identify abnormal or sub-optimal sustainability performance |
| | 1.4 Identify hazards associated with process, plant and equipment relevant to work area |
| | 1.5 Collect and evaluate relevant records to determine possible causes for sub-optimal sustainability performance |
| | 1.6 Use appropriate techniques to rank possible causes from most to least probable cause |
| 2 Develop plan to optimise sustainable performance of process or work area | 2.1 Analyse causes to determine appropriate action |
| | 2.2 Predict the impact of a change in one unit or area on other value chain components |
| | 2.3 Predict the impact of a change on sustainability performance |
| | 2.4 Develop measurable objectives and evaluate alternatives |
| | 2.5 Identify requirements to implement change |
| | 2.6 Consult with stakeholders regarding planned changes and impacts |
| | 2.7 Develop optimisation plan taking account of hazards identified and sustainability implications and communicate to appropriate personnel |

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- 2.8 Evaluate optimisation action to determine measures of effectiveness
- 3 Coordinate sustainability optimisation action plan
 - 3.1 Coordinate all appropriate process steps and operations in order to rectify causes in process, plant and equipment performance
 - 3.2 Initiate and/or implement all required optimisation actions
 - 3.3 Communicate optimisation outcomes to all relevant personnel
 - 3.4 Implement procedures and systems to eliminate possible future causes
 - 3.5 Record all relevant information
- 4 Develop continuous improvement strategies
 - 4.1 Review sources of information to identify possible factors causing sub-optimal performance
 - 4.2 Identify options for removing or controlling the risk of sub-optimal performance
 - 4.3 Assess the adequacy of existing control and quality methods and systems
 - 4.4 Identify opportunities to continuously improve performance
 - 4.5 Develop recommendations for continual improvement of process, plant and equipment effectiveness
 - 4.6 Consult with appropriate personnel and implement continuous improvement strategies

Document implementation of continuous improvement strategies

Required Skills and Knowledge

Required knowledge includes:

- principles and theory of the process, equipment and systems used in the work area sufficient to:
 - identify sustainability issues and impacts
 - identify other hazards associated with the process
 - recognise opportunities to improve and/or enhance the sustainability performance of the plant
 - understand changes or transformations to materials or components occurring during processing
- support functions needed for effective functioning of the process or work area, such as logistics, order processing, warehousing and storage, maintenance and administration
- organisational standard procedures and work instructions
- relevant regulatory requirements, including those related to sustainability and occupational health and safety (OHS) risk control, as appropriate to process/plant area optimisation
- starting quantity and quality of materials
- efficiency maximisation processes relevant to work area
- throughput maximisation processes relevant to work area
- energy efficiency concepts relevant to work area
- potential ecological impacts of work area processes or products
- use of utilities
- labour utilisation concepts relevant to work area, including:
 - overall cost
 - efficient use of equipment
 - reducing downtime
- minimisation of waste and rework
- potential of improved workplace layout and workflow

Required skills include:

- identifying sustainability goals of the enterprise and identifying implications for work area
- analysing process or work area plant and equipment to determine optimal related conditions or performance against enterprise sustainability goals
- interpreting information and making appropriate process control decisions
- distinguishing optimum and marginal performance of the work area process, plant or equipment
- distinguishing effective and marginal sustainability related performance corrections and actions
- identifying and controlling hazards by applying the hierarchy of control as part of the optimisation process
- communicating with team members and specialists on process and sustainability issues
- finding, analysing and using information

- reading and interpreting technical information
- analysing product/process performance data

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to analyse current sustainability performance of a process or plant area and prepare proposals for measurable improvement in sustainability.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include:</p> <ul style="list-style-type: none"> • analysing and evaluating current production performance, and developing and implementing plans to optimise process systems • determining sustainability impacts of current processes and products in work area • developing proposals for improvement to processes that are measurable and positively impact on sustainability.
Context of and specific resources for assessment	<ul style="list-style-type: none"> • This unit of competency is to be assessed in the workplace or a simulated workplace environment. • Assessment should emphasise a workplace context and procedures found in the candidate's workplace. • This unit of competency may be assessed with other relevant units addressing sustainability at the enterprise level or other units requiring the exercise of the skills and knowledge covered by this unit. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.
Method of assessment	<ul style="list-style-type: none"> • In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work-like environment.
Guidance information for assessment	

Range Statement

Sustainability	<p>Sustainability is used to mean the entire sustainable performance of either the organisation/plant or the process or work area depending on the context of the relevant sentence. It includes:</p> <ul style="list-style-type: none"> • meeting all regulatory requirements • conforming to all relevant industry covenants, protocols and best practice guides • minimising ecological footprint of process, plant, product or work area • maximising economic benefit of process plant and product to the organisation and the community • minimising the negative OHS impact on employees, community and customer (e.g. OHS impacts of process, product and wastes)
Value chain components	<p>Value chain components include:</p> <ul style="list-style-type: none"> • all components from source through use to reuse and disposal if necessary
Interactions with the environment	<p>Interactions with the environment may include:</p> <ul style="list-style-type: none"> • drawing physical resources from the environment • releasing materials to the environment (e.g. emissions) • drawing energy from/releasing energy to the environment
Procedures	<p>Procedures include:</p> <ul style="list-style-type: none"> • all work instructions, standard operating procedures, formulas/recipes, batch sheets, temporary instructions and similar instructions provided for the smooth running of the plant • good operating practice as may be defined by industry codes of practice (e.g. good manufacturing practice (GMP) and responsible care) and government regulations <p>Procedures may be:</p> <ul style="list-style-type: none"> • written, verbal, computer-based or in some other form
Typical problems	<p>Typical problems will require the application of detailed operational and process knowledge over the entire production/manufacturing area, including the principles of operation of the equipment. For manufacturing areas it may include the science of the changes to materials occurring within that area and the sustainability impacts of those changes</p>

Environmental sensitivities	<p>Environmental sensitivities may include:</p> <ul style="list-style-type: none"> • fragile areas, and rare or threatened species • heritage or cultural sensitivity issues • hazardous emissions • real or perceived overuse of scarce resources • noise • regulated emissions or other regulatory issues • community perceptions or other issues
Performance	<p>Performance covers the process, plant and equipment performance.</p> <p>Possible performance includes that performance indicated by:</p> <ul style="list-style-type: none"> • historical data and records • design performance <p>It may also include process/takt time requirements</p>
Sustainability issues	<p>Sustainability issues (as relevant to the work/process area) may include:</p> <ul style="list-style-type: none"> • need to reduce the carbon footprint of product and process through reduction in use of: <ul style="list-style-type: none"> • energy • water • raw materials • emissions • embedded carbon in transport, storage, rework and errors, inefficient processes and design <p>Sustainability related issues may also exist irrespective of the carbon equivalence aspects of the issue. This may include:</p> <ul style="list-style-type: none"> • current and future availability of raw materials • current and future availability of energy • extent and type of waste generation and disposal • efficiency of process in terms of consumption of materials and energy regarded as in short supply or which are regarded as environmentally sensitive • the extent to which the production process, product and waste affects the environment, including effects on: <ul style="list-style-type: none"> • climate • quality of local air and water • ecology • noise • relationship with the local and broader community,

	<p>(e.g. effect of operations on aesthetic appearance, preservation of heritage, and proximity to schools and religious facilities)</p> <ul style="list-style-type: none"> • extent of regulatory oversight and extent and cost of compliance
Hazards	<p>Hazards is used to include:</p> <ul style="list-style-type: none"> • sustainability hazards • environmental hazards • health hazards • safety hazards
Data and records	<p>Historical data and records may include:</p> <ul style="list-style-type: none"> • orders, project briefs or customer specifications • hazard logs • incident reports • maintenance records • errors and non-conformance reports • production records

Unit Sector(s)

Sustainability

Custom Content Section

Not applicable.